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The metal-insulator transition in a phase-separated manganite studied by in situ STS[1] P.C. SNIJDERS, ORNL, M. GAO, IOP, CAS, Bejing, China and ORNL, H. GUO, ORNL, Univ. of Tennessee, T.Z. WARD, ORNL, H.-J. GAO, IOP, CAS, Bejing, China, J. SHEN, Univ. of Tennessee and Fudan Univ. Shanghai, China, Z. GAI, ORNL — Electronic phase separation (EPS) is a key feature at the heart of the wide variety of electronic and magnetic properties in complex oxides. One consequence of EPS is that electronic transport experiments in bulk materials or 2D films mostly probe the low resistivity electronic phases due to the percolative path of the current. We study oxygen deficient $La_{5/8-x}Pr_xCa_{3/8}M\ nO_3$ (LPCMO) thin films using both *in situ* scanning tunneling spectroscopy (STS) and *ex situ* transport experiments. The oxygen deficiency is known to decrease the metal-insulator transition (MIT) temperature or even completely suppress the MIT in conventional transport experiments. We show that *in situ* STS is able to detect the MIT even in systems where conventional transport experiments do not show an MIT at zero magnetic field.

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